

WE CLAIM:

1. A wireless digital launch or firing system comprising:

5 (a) a transmitter unit having a first transmitter element for generating a first radio-frequency (RF) signal representing a first digital code sequence, and a second transmitter element for generating a second RF signal representing a second digital code sequence which is different from that of the first RF signal;

10 (b) a receiver unit having: (i) a receiver circuit for receiving the RF signals transmitted by the transmitter unit and demodulating them into respective digital code sequences; (ii) a digital processor for receiving the demodulated digital code sequences from the receiver circuit and comparing them to stored
15 first and second digital code sequences, said digital processor outputting an "enable" signal if the demodulated first digital code sequence matches the stored first digital code sequence, and an "actuate" signal if the demodulated second digital code sequence matches the stored second digital code sequence; (iii) a memory latch
20 device which maintains a normally-off primary switch in an "on" condition once the memory latch device receives the "enable" signal from the digital processor; and (iv) a normally-off secondary switch which is set to an "on" condition when it receives the "actuate" signal from the digital processor,

25 wherein, when both said primary and secondary switches are in the "on" condition, an electrical output is provided to actuate a launch or firing device.

30 2. A system according to Claim 1, wherein the RF signals transmitted by the transmitter are in pulse code form and modulated on a single frequency.

3. A system according to Claim 1, wherein the RF signal represents digital code sequences having a first plurality of bits which are predetermined and stored in the transmitter and receiver units.

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4. A system according to Claim 2, wherein the digital code sequences have a second plurality of bits which are determined by user selection.

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5. A system according to Claim 2, wherein the digital code sequences have one bit determined by activation of the first transmitter element and another bit determined by activation of the second transmitter element.

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6. A system according to Claim 1, wherein the transmitter unit includes a digital encoder, the first transmitter element as a primary switch which provides one input to the digital encoder, and the second transmitter element as a secondary switch which provides another input to the digital encoder.

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7. A system according to Claim 6, wherein the first transmitter element is a first button switch which provides a one-bit input to the digital encoder when depressed, and the second transmitter element is a second button switch which provides another one-bit input to the digital encoder when depressed.

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8. A system according to Claim 2, wherein the receiver circuit demodulates the single-frequency pulse code signals and provides the demodulated code signals to a digital decoder which compares them with stored digital code sequences.

9. A system according to Claim 8, wherein the demodulated and stored digital code sequences have a first plurality of bits which are predetermined and stored in the transmitter and receiver units.

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10. A system according to Claim 9, wherein the digital code sequences have a second plurality of bits which are determined by user selection.

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11. A system according to Claim 9, wherein the digital code sequences have one bit determined by activation of the first transmitter element and another bit determined by activation of the second transmitter element.

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12. A system according to Claim 10, wherein said second plurality of bits is determined by user setting of a selectable position switch which supplies bits based on the selected position for the digital code sequences.

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13. A system according to Claim 1, wherein said memory latch device provides an indefinite "enable" period.

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14. A system according to Claim 1, wherein said memory latch device provides a timed "enable" period.

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15. A system according to Claim 1, wherein the receiver unit includes an external warning light to indicate that the primary switch has been closed to set the receiver unit in the "enable" condition.

16. A system according to Claim 1, further comprising a sequencer module for providing a plurality of outputs in sequence for actuating a plurality of launch or firing devices, said sequencer module receiving an electrical output from said system as an "actuate" input signal to provide one of the plurality of sequencer outputs.

17. A system according to Claim 16, wherein said sequencer module includes as a last one of its plurality of outputs an "enable" output signal which is provided as an "enable" input signal to enable actuation of a next sequencer module connected to said first-described sequencer module, and said next sequencer module receiving an electrical output from said system as an "actuate" input signal to provide one of the plurality of sequencer outputs.

18. A wireless digital launch or firing device comprising:

(a) a receiver circuit for receiving a first radio-frequency (RF) signal representing a first digital code sequence, a second RF signal representing a second digital code sequence which is different from that of the first RF signal, and demodulating them into respective digital code sequences;

(b) a digital processor for receiving the demodulated digital code sequences from the receiver circuit and comparing them to stored first and second digital code sequences, said digital processor outputting an "enable" signal if the demodulated first digital code sequence matches the stored first digital code sequence, and an "actuate" signal if the demodulated second digital code sequence matches the stored second digital code sequence;

(c) a memory latch device which maintains a normally-off primary switch in an "on" condition once the memory latch device

receives the "enable" signal from the digital processor; and

(d) a normally-off secondary switch which is set to an "on" condition when it receives the "actuate" signal from the digital processor,

5 wherein, when both said primary and secondary switches are in the "on" condition, an electrical output is provided to actuate a launch or firing device.

10 19. A device according to Claim 18, further comprising a sequencer module for providing a plurality of outputs in sequence for actuating a plurality of launch or firing devices, said sequencer module receiving an electrical output from said device as an "actuate" input signal to provide one of the plurality of sequencer outputs.

15 20. A method of wireless digital launching or firing comprising:

20 (a) receiving a first radio-frequency (RF) signal representing a first digital code sequence, a second RF signal representing a second digital code sequence which is different from that of the first RF signal, and demodulating them into respective digital code sequences;

25 (b) receiving the demodulated digital code sequences and comparing them to stored first and second digital code sequences, and outputting an "enable" signal if the demodulated first digital code sequence matches the stored first digital code sequence, and an "actuate" signal if the demodulated second digital code sequence matches the stored second digital code sequence;

30 (c) maintaining a normally-off primary switch in an "on" condition once the "enable" signal is output; and

(d) setting a normally-off secondary switch to an "on" condition when the "actuate" signal is output,

(e) providing an electrical output to actuate a launch or firing device when both said primary and secondary switches are in the "on" condition.